Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Review of the Commission's Rules Governing the 896-901/935-940 MHz Band	)	WT Docket No. 17-200
	)	
	)	
Realignment of the 896-901/935-940 MHz Band to Create a Private Enterprise Broadband Allocation	)	
	)	
	)	
Amendment of the Commission's Rules to Allow for Specialized Mobile Radio Services Over 900 MHz Business/Industrial Land Transportation Frequencies	)	

REPLY COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS

The Association of American Railroads ("AAR") hereby submits these reply comments in response to the Notice of Inquiry ("NOI") in the above-captioned proceeding.[1] In the NOI, the Federal Communications Commission ("FCC" or "Commission") seeks input on the potential for modification to the 896-901/935-940 MHz ("900 MHz") band's operational rules and band configuration.[2] As explained in AAR's initial comments and below, AAR's proposal to consider the possibility of wideband channels (*e.g.*, those that are 50-500 kHz wide) in the 900 MHz band would accommodate the growing needs of railroads and other mission-critical, safety-of-life users while protecting vital communications.[3] If, instead, the Commission decides to pursue the

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[1] *Review of the Commission's Rules Governing the 896-901/935-940 MHz Band; Realignment of the 896-901/935-940 MHz Band to Create a Private Enterprise Broadband Allocation; Amendment of the Commission's Rules to Allow for Specialized Mobile Radio Services Over 900 MHz Business/Industrial Land Transportation Frequencies*, Notice of Inquiry, 32 FCC Rcd 6421 (2017) ("NOI").

[2] *See generally id.*

[3] *See* AAR Comments, WT Docket No. 17-200 (filed Oct. 2, 2017) ("AAR Comments"). AAR is a voluntary non-profit membership organization whose freight railroad members operate 82 percent of the line-haul mileage, employ

creation of a broadband service in the 900 MHz band, the Commission must ensure that the operations of railroads and other mission-critical, safety-of-life users are protected from harmful interference.

I. AAR's Wideband Channel Proposal Would Benefit Railroads, Other Private Licensees, and the Public Interest in Protecting Vital Communications.

Railroads and other mission-critical wireless users have growing—yet still relatively modest—spectrum needs and stand to benefit from the greater flexibility that wider channels permit. AAR's wideband channel proposal would satisfy these needs while allowing 900 MHz band operators to remain in control of their own wireless networks, thus protecting vital communications.

Today, railroads depend on the 900 MHz band spectrum to monitor and control train traffic, track operations, and provide critical information to first responders.[4] Wider channels would provide greater capacity to support railroads' deployment of innovative services, including advanced defect detection, increased support for rail monitoring, and increased oversight of maintenance activities.[5] As explained in AAR's comments, railroads' bandwidth needs will continue to increase as new, more data-intensive wireless applications that improve safety and efficiency are deployed.[6]

Railroads are, of course, not alone in their need for additional spectrum for mission-critical and safety uses. Duke Energy Corp. observes that utilities' spectrum needs will "grow

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95 percent of the workers, and account for 97 percent of the freight revenues of all railroads in the United States. More information on AAR is available at our website, http://bit.ly/2rznZLv.

[4] *See* AAR Comments at 3-4.

[5] *See id.* at 5-6.

[6] *See id.* at 2, 5-7.

dramatically as the number of intelligent grid field monitoring and control devices increases,"[7] and supports using wider channels to accommodate electric system modernization efforts.[8] Southern Company Services, Inc. ("Southern Company") states that its 900 MHz band wireless communications system "was designed to be spectrum-efficient," but greater bandwidth would help support "the increasing reliability, security, and efficiency needs of the nation's energy infrastructure."[9] Likewise, the Utilities Technology Council ("UTC") explains that utilities "must increase capacity to support smart grid deployment and new cybersecurity requirements . . . and other utility applications that protect the safety, reliability, and security of utility operations."[10]

AAR's proposal, which would permit channel sizes of up to 50-500 kHz or allow the grouping of channels up to 125 kHz, would satisfy those needs while allowing mission-critical wireless users to remain in control of their own wireless networks, which is essential to protecting mission-critical and safety-of-life communications.[11] Wideband channels would also offer additional flexibility to licensees in the band, providing opportunities for incumbents and

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[7] *Cf.* Duke Energy Corp. Comments, WT Docket No. 17-200 *et al.*, at 5 (filed Oct. 2, 2017) (explaining that utilities need more spectrum so that they can address energy distribution and delivery demands in near real-time).

[8] *See* Duke Energy Corp. Comments, GN Docket No. 17-183, at 5 (filed Oct. 2, 2017). In a separate proceeding, Duke Energy Corp. stated that "Smart Grid and other modernization efforts are driving the need for more bandwidth across all frequency bands that Duke Energy uses" and that it requires "more spectrum, including wider channels, to keep up with the needs of [these] efforts." *Id*. at 4-5.

[9] *See* Southern Company Comments, WT Docket No. 17-200, at 7, 9 (filed Oct. 2, 2017) ("Southern Company Comments"); *see also, e.g.*, UTC Comments, WT Docket No. 17-200 *et al.*, at 8-9 (filed Oct. 2, 2017) ("UTC Comments").

[10] UTC Comments at 8.

[11] *See* AAR Comments at 5.

new entrants alike to deploy a variety of technologies that have Internet of Things or other data requirements that cannot be met on narrowband channels.[12]

Like AAR, other 900 MHz band operators recognize that the Commission's rules should accommodate increasing spectrum demands, while protecting incumbents from harmful interference.[13] For example, Southern Company supports efforts to provide the "data capacity and low latency necessary" for the types of reliable, mission-critical technologies that utility, critical infrastructure, and railroad companies will deploy.[14] However, Southern Company cautions that the introduction of a broadband service has significant potential to create interference to services in adjacent bands.[15] Commenters such as Exelon Corp. echo this concern and warn that the costs, disruptions, and potential interference attributable to reconfiguring the 900 MHz band would outweigh the benefits of introducing a broadband service.[16]

In this vein, the Commission should carefully consider the needs of mission-critical services in adjacent bands when considering proposals for broadband in the 900 MHz band that require sharing of infrastructure or of frequencies. This arrangement is simply insufficient when life and safety are at stake.[17] Mission-critical, safety-of-life users need coverage everywhere—in urban, suburban, and rural areas—and not just where it is profitable for commercial operators to

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[12] For purposes of these reply comments, "narrowband" refers to the 12.5 kilohertz frequency pairs that comprise the 900 MHz band, not the channel bandwidths associated with 3GPP IoT technologies that are considered "narrowband." For example, the 3GPP technology referred to as "Narrowband IoT" (or "NB-IoT") uses 200 kHz channels.

[13] *See, e.g.*, Southern Company Comments at ii, 9.

[14] *Id.* at 9.

[15] *Id.* at 10.

[16] *See, e.g.*, Exelon Corp. Comments, WT Docket No. 17-200, at 3 (filed Oct. 2, 2017) ("Exelon Comments") NextEra Energy, Inc. Comments, WT Docket No. 17-200, at 3, 6-10 (filed Oct. 2, 2017) ("NextEra Comments").

[17] *See* AAR Comments at 6-7.

build out their networks.[18] Recognizing the importance of such widespread deployment, entities have made substantial investments in highly reliable, available, and resilient facilities equipped for catastrophic events throughout their footprints.[19] For example, the Lower Colorado River Authority ("LCRA") has spent hundreds of millions of dollars to build a communications system over its 50,000 square mile service territory that can withstand a major weather event.[20] There would be "no guarantee or reasonable expectation," as the Critical Infrastructure Coalition puts it, that a third party would be willing to design or build a system with similar reliability.[21] On the contrary, services offered by commercial providers can be expected to "go down during a power outage" or be "rendered unavailable due to other traffic on the network."[22] This is just not good enough. As the UTC says, utilities "do not or will not rely on commercial communications . . . due to concerns about the reliability."[23] When time is of the essence, railroads and other mission-critical users cannot have the dependability of their communications be at the mercy of the weather or of other network users.[24]

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[18] *See id.* at 7.

[19] *See, e.g.*, National Association of Manufacturers and MRFAC, Inc. Comments, WT Docket No. 17-200 *et al.*, at 2-3 (filed Oct. 2, 2017) (listing member investments ranging from $1.5 million to over $6 million in 900 MHz facilities); NextEra Comments at 4 ("FPL has invested $81M in its existing Part 90 Private Land Mobile Radio ('PLMR') systems to facilitate daily dispatch, maintenance and power plant operations, including voice communications required to comply with Nuclear Regulatory Commission regulations for plant security and operations at nuclear power plants, and for nuclear siren system operations for public alert notifications.").

[20] *See* Critical Infrastructure Coalition Comments, WT Docket No. 17-200, at 13 (filed Oct. 2, 2017) ("CIC Comments").

[21] *See id. See also* Westar Energy, Inc. Comments, WT Docket No. 17-200 *et al.*, at 3 (filed Oct. 2, 2017).

[22] *See* UTC Comments at 7.

[23] *See id.* at 4-5.

[24] *See* AAR Comments at 7; UTC Comments at 7.

II. If the Commission Adopts One of the Broadband Proposals, Interference Protection for Railroads and Other Mission-Critical Users Should Be a Top Priority.

AAR is confident that its wideband channel proposal meets the needs of private licensees while protecting vital communications. However, if the Commission decides to move forward with one of the pending broadband proposals instead,[25] ensuring protection from interference for railroads and other mission-critical users must be a top priority.

As discussed above, broadband operations could lead to harmful interference to 900 MHz band incumbents.[26] And, as a number of commenters observed, [27] harmful interference is simply unacceptable when incumbents are engaging in mission-critical, safety-of-life communications, such as disaster recovery efforts, electrical and water service maintenance and restoration, and power plant operations.[28] To make any broadband channel compatible with existing operations, the Commission would therefore need to impose strict out-of-band emission ("OOBE") and power requirements on any broadband allocations that are adjacent to narrowband (or future wideband) safety-of-life allocations.[29] Coordination requirements alone for broadband licensees would not suffice, especially when such requirements would impose similar burdens on mission-critical narrowband/wideband operators.[30]

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[25] *See* NOI ¶¶ 12-16.

[26] *See, e.g.*, CIC Comments at 9-11; Southern Company Comments at 10; NextEra Comments at 3; Exelon Comments at 3.

[27] *Cf.* CIC Comments at 9-10; Exelon Comments at 2-5; Edison Electric Institute Comments, WT Docket No. 17-200 *et al.*, at 13-15 (filed Oct. 2, 2017) (noting that the band plan proposed by EWA/PDV would closely pack existing PLMR systems, increasing the potential for harmful interference).

[28] *See* CIC Comments at 3.

[29] *See* AAR Comments at 9.

[30] *See id.*

If technical solutions cannot mitigate the interference that may occur between dissimilar narrowband/wideband and broadband uses, railroad and other critical incumbent operations may have to be relocated to ensure adequate separation (spectral and/or geographic).[31] Assuming that the 900 MHz band cannot accommodate a guard band due to its size, one alternative would be to implement a transition plan similar to the approach followed for public safety incumbents in the 800 MHz band.[32] But relocation costs would be significant—AAR calculates the costs could reach $100 million for railroad operations alone—and would require revisiting the cross-border arrangements between the U.S. and Canada.[33] At a minimum, identifying how to accommodate the interests of the U.S. and Canadian administrations would require careful study.[34]

III. Conclusion

The Commission should consider the possibility of wideband channels in the 900 MHz band in light of the growing spectrum needs of railroads and other mission-critical, safety-of-life operators. Wider channels would allow such users to operate new, data-intensive wireless applications that improve safety and efficiency and do not necessarily require broadband at this time, while allowing mission-critical wireless users to remain in control of their own wireless networks. Should the Commission decide to adopt one of the pending broadband proposals, however, interference protection for railroads and other mission-critical users must be a top priority to ensure vital communications are not disrupted.

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[31] *See id.* at 8-9.

[32] *See id. See also, e.g., Improving Public Safety Communications in the 800 MHz Band et al.*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969 ¶ 151 (2004).

[33] *See* AAR Comments at 7-8.

[34] *See id.*

Respectfully submitted,

/s/ Michele Farquhar

Kathryn D. Kirmayer
Timothy J. Strafford
THE ASSOCIATION OF AMERICAN RAILROADS
425 Third Street, SW
Suite 100
Washington, DC 20024

Michele C. Farquhar
Tom Peters
Wesley B. Platt
Camillie Landrón

HOGAN LOVELLS US LLP
555 Thirteenth Street, NW
Washington, DC 20004
Phone: (202) 637-5663

Counsel to the Association of American Railroads

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